

REMARKS

The Applicants have studied the Office Action dated April 26, 2005 and have made amendments to the claims to more distinctly claim and particularly point out the subject matter which the Applicants regard as the invention. No new matter has been added by these amendments. By virtue of this amendment, claims 1-26 are pending. Reconsideration and allowance of the pending claims in view of the above amendments and the following remarks is respectfully requested.

Allowable Subject Matter

The Applicants wish to thank Examiner Channavajjala for indicating that claims 3-6, 10-12, 15-18 and 21-23 contain allowable subject matter:

Claim Amendments

The Applicants have amended independent claims 1, 7, 13, 19, 24 and 26 to more clearly specify that ditto addresses are stored in the disk address of inodes. Support for these amendments is found in the specification at, for example, page 28, lines 16-24. No new matter has been added by these amendments.

Rejection Under 35 U.S.C. § 103(a)

The Examiner rejected claims 1-2, 7-8, 13-14, 19-20, and 24-26 under 35 U.S.C. §103(a) as being unpatentable over O'Brien et al., (U.S. Patent No. 6,038,689) (Hereinafter "O'Brien") in view of Hitz et al., (U.S. Patent No. 6,721,764) (Hereinafter "Hitz"). The Examiner recites 35 U.S.C. §103. The Statute expressly requires that obviousness or non-obviousness be determined for the claimed subject matter "as a whole," and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention "as a whole."

With regards to claims 1, 7, 13 and 19, the Applicants assert that the O'Brien reference and Hitz reference, taken either alone or in combination with one another, do not teach several of the limitations of these claims, particularly when these claims are considered "as a whole." The Applicants will use the example of claim 1 in the following remarks and assert that the same remarks are applicable to claims 7, 13 and 19 as well.

The Applicants traverse the Examiner's assertion that O'Brien teaches the claimed limitation of:

copying, in response to accepting the command to modify metadata, at least a portion of the metadata within the second inode into a first inode within the snapshot dataset

The Applicants assert that the cited portions of O'Brien do not mention metadata and do not mention copying metadata. As stated by the Examiner, the O'Brien reference does not teach "a command to modify metadata..." Office Action, Page 5, first paragraph. The Applicants assert that the O'Brien reference does not teach or mention metadata at all. The Applicants disagree with the Examiner's characterization of the O'Brien reference as specifically teaching "modifying metadata." *Id.* The Applicants assert that the operations described in the O'Brien reference that are cited by the Examiner, including "copy, delete and the like" address actual data and not metadata. Further, the Applicants point out that the Examiner has not cited a reference for the remainder of this limitation, namely, "copying, in response to accepting the command to modify metadata, at least a portion of the metadata within the second inode into a first inode within the snapshot dataset." The Applicants point out that O'Brien does not teach or suggest inodes and that the recited copying is not taught or suggested by the Hitz reference.

The Applicants further traverse the Examiner's assertion that the O'Brien reference teaches "storing, in response to accepting disk address values, ditto address." Office Action, page 4, last paragraph. The Applicants point out that this step recites "storing, ..., disk address values into a disk address of the first inode." The Applicants point out that the O'Brien reference stores disk address information in tables, such as the "Track Number Table" or "TNT" illustrated in FIG. 2. The Applicants assert that this is different than storing disk address information in an inode and that the O'Brien reference does not include a teaching of this limitation.

The Applicants also traverse the Examiner's assertion that O'Brien teaches that "the

ditto address indicating that the true disk address for the actual data block stored, subsequent snapshot." Office Action, page 4, last paragraph. The Applicants point out that the actual claim language states "the ditto address indicating that the true disk address for the actual data block is stored in one of an inode of the file system and a subsequent snapshot." The Applicant asserts that the "virtual track address" taught by O'Brien are used by the processor, and that a controller in the O'Brien system maps this virtual track address to physical storage locations and logical addresses of stored data files. O'Brien, Column 3, lines 41-46. This clearly shows that the virtual track addresses are mapped to logical addresses. The virtual track addresses of O'Brien are used to indicate where the logical address is located, and do not indicate the simple fact "that the true disk address for the actual data block is stored in one of an inode of the file system and a subsequent snapshot" as is set forth in claim 1. The Applicants further assert that the "track number" stored in the Virtual Track Table illustrated in FIG. 2 of O'Brien illustrates a mapping of where in the Track Number Table (TNT) the "logical address" is stored. The Applicants assert that no data in O'Brien simply indicates "that the true disk address for the actual data block is stored" in a specified location, such as "in one of an inode of the file system and a subsequent snapshot" as is recited by claim 1.

Further, the Applicants have amended the independent claims to specify that the ditto address is stored in a disk address of the inode. The Applicants further assert that the limitations of claims 1, 7, 13 and 20 should be considered "as a whole." In so considering these claims, it is clear that the last limitation of claim 1 discusses storing the ditto address into a disk address of an inode and that this disk address location field is a location where the physical disk address is normally found. When considered as such, the Applicants assert that, contrary to the Examiner's assertion, it is clear that the "virtual track table page instance" of O'Brien does not correspond to storing of the ditto addresses, as set forth for the presently claimed invention.

With regards to the Hitz reference, the Applicants traverse the Examiner's assertion that the cited portion of the Hitz reference teaches "accepting ... a command to modify

metadata.” The cited portions of Hitz only describe inodes and their contents, and the structure of multiple level inodes. No command to modify this metadata is taught in the cited portions of this reference.

The Applicants are unclear as to the meaning of the Examiner’s assertion that Hitz teaches “at least a portion of the metadata within the second inode into a first inode within the snapshot.” Office Action page 5, second paragraph, citing Hitz column 6, lines 45-48. The applicants point out that this fragment is part of a limitation that includes “copying, in response to accepting the command to modify metadata, at least a portion of the metadata...” If the Examiner is asserting that the Hitz reference teaches copying metadata into a snapshot, the Applicants assert that the limitation should be considered “as a whole” and that the copying of metadata, in response to accepting the command to modify metadata” is not taught or suggested by the cited prior art references, taken either alone or in any combination with one another.

The Applicants are also unclear as to the meaning of the Examiner’s assertion that Hitz teaches “data block is stored in one of an inode of the file system.” Office Action page 5, second paragraph, citing Hitz, column 6, lines 19-26. The Applicant assumes that the Hitz reference is being cited to teach that disk addresses are stored in inodes. Again, the Applicants assert that the claim, and also the relevant limitation, should be considered “as a whole” and that the limitation, which recites “the ditto address indicating that the true disk address for the actual data block is stored in one of an inode of the file system and a subsequent snapshot,” is not taught or suggested by the cited references. This limitation specifies that the “ditto address,” which is stored in a disk address of the first inode, is “indicating that the true disk address” is stored in a specified location. The Hitz reference does not teach or suggest a “ditto address” that indicates “that the true disk address for the actual data block is stored in one of an inode ...” as is recited for claim 1.

The Applicants assert that storing physical disk addresses in inodes, as taught by the Hitz reference, will yield an inoperable system if combined with the O’Brien system.

Further, application of Hitz to O'Brien would destroy the "intent and purpose" of the O'Brien system. The Applicants point out that the Hitz system, as in embodiments of the present invention, inodes only store physical disk addresses for either data blocks or indirect blocks. Hitz, Column 6, lines 3-43. The teachings of O'Brien, however, store virtual track numbers into a Virtual Track Table to specify locations within a Track Number Table as data blocks are required. The Track Number Table is then populated to reflect the logical addresses for the data. O'Brien, FIG. 2. In contrast, the system of Hitz requires actual physical disk addresses in inodes or indirect blocks in order to access data blocks. The system of Hitz allows a flexible mixing of inodes/indirect blocks and data blocks used to store actual data, but data block addresses are always stored in inodes. In contrast, the O'Brien system uses a two table approach that uses logical track numbers in one table that map to Track Number Table entries. The Virtual Track Table of O'Brien stores virtual track values maintained by the processor that provides "a unique immutable name." O'Brien, Column 6, lines 18-38. As the inodes of Hitz are moved into different addresses, these physical addresses change. Storing those physical addresses into the Virtual Track Table of O'Brien would destroy the "unique immutable name" characteristic of O'Brien and yield an inoperable system or, at least, destroy the intent and purpose of the O'Brien system.

The Applicants further traverse the Examiner's motivation to combine the O'Brien and Hitz reference. The Examiner states that the motivation to combine "would have allowed users of O'Brien to use data structure that includes various levels inode bringing the advantage of indirect and direct buffers that manage inodes in WAFL as suggested by Hitz." Office Action page 6, first paragraph. The Applicants are at a loss to see how this structure would benefit the O'Brien system, which incorporates a two level mapping table to allow redundancy. Hitz teaches that the multiple levels of inodes are required to accommodate larger data files. Hitz, Column 6, lines 3-43. The tables of O'Brien are not taught to be limited in size, as are the inodes of Hitz, so the expandability afforded by the multiple levels of inodes of Hitz would be of no benefit. Further, the Applicants do not understand the Examiner's statement of "advantages of indirect and direct buffers that manage inodes." Office Action, page 6, first paragraph.

As discussed above, the Applicants assert that applying Hitz to O'Brien would lead to an inoperable system, or at least destroy the intent and purpose of O'Brien,

With regards to claims 2, 8, 14, and 20, the Applicants reassert the above comments with regards to "copying, ..., to the first inode," and "storing, ..., into the first inode." The applications also reassert their distinction between a ditto address and any teaching of the O'Brien and Hitz references, taken either alone or in combination with one another. Further, these claims depend from claims 1, 7, 13 and 19, respectively, and contain all of the limitations thereof. As discussed above, claim 1 distinguishes over the cited prior art, and claims 7, 13 and 19 have limitations corresponding to those of claim 1, and therefore also distinguish over the cited prior art references. Therefore, claims 1, 2, 7, 8, 13, 14 and 19, 20 distinguish over the cited prior art references and their rejection under 35 U.S.C. §103(a) should be withdrawn.

With regards to claim 24 and 26, the Applicants have amended claims 24 to more clearly specify that the existence of a ditto address in a disk address of an inode is to be detected. The Applicants reassert their remarks, made above in regards to claim 1, that concern the lack of a teaching or suggestion of a ditto address by the prior art of record. Further, the applicants assert that the prior art does not teach or suggest "determining that there is a ditto address" anywhere, let alone "in a disk address of an inode" as is set forth in claim 24 and 26.

With further regards to claim 24, the Applicants assert that the prior art of record, taken either individually or in combination with one another, does not teach "deleting, in response to determining that there is no older snapshot, any inode or data block in the first snapshot." The Examiner cites O'Brien, Column 6, lines 39-46 as a teaching of this limitation in combination with Hitz, column 9, lines 19-24. The Applicants assert that while O'Brien may teach "copy, delete, and other commands" as asserted by the examiner, none of these operations are performed in response to any type of determination, such as the determination set forth in claim 24.

As discussed above, claims 24 and 26 distinguish over the cited prior art. Claim 25 depends from claim 24 and contains all of the limitations thereof. Therefore, claims 24-26 distinguish over the cited prior art and their rejection under 35 U.S.C. §103(a) should be withdrawn.

CONCLUSION

The remaining cited references have been reviewed and are not believed to effect the patentability of the claims as amended.

In this Response, Applicants have amended certain claims. In light of the Office Action, Applicants believe these amendments serve a useful clarification purpose, and are desirable for clarification purposes, independent of patentability. Accordingly, Applicants respectfully submit that the claim amendments do not limit the range of any permissible equivalents.

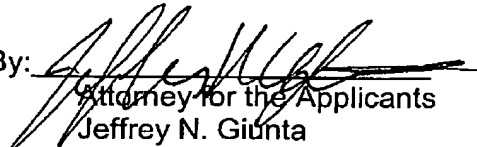
Applicants acknowledge the continuing duty of candor and good faith to disclosure of information known to be material to the examination of this application. In accordance with 37 C.F.R. § 1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment is limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicants and their attorneys.

Applicants respectfully submit that all of the grounds for rejection stated in the Examiner's Office Action have been overcome, and that all claims in the application are allowable. No new matter has been added. It is believed that the application is now in condition for allowance, which allowance is respectfully requested.

PLEASE CALL the undersigned if that would expedite the prosecution of this application.

Respectfully Submitted,

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